

REMARKS

This Amendment is presented in response to the Examiner's Office Action mailed January 15, 2004. Claims 1 and 21 are amended, and new claims 28-30 are added. Claims 10-12 and 15-20 were previously canceled. Claims 1-9, 13-14, and 21-30 remain pending.

Reconsideration of this application is respectfully requested in view of the above amendments to the claims and the following remarks. For the convenience and reference of the Examiner, the remarks of the Applicant are presented in the order in which the corresponding issues were raised in the Office Action.

As to the amendments contained herein, Applicant respectfully notes that such amendments have been made simply to clarify the claimed invention from elements purported by the Examiner to be disclosed by the cited references. Such amendments should not, however, be construed as an acquiescence on the part of the Applicant as to the purported teachings or prior art status of the cited references, nor as to the characterization of the cited references advanced by the Examiner. Accordingly, Applicant reserves the right to challenge the purported teachings and alleged prior art status of the cited references at any appropriate time.

I. Claim Rejections Under 35 U.S.C. § 102(e)

In connection with the matters contemplated herein, Applicant respectfully notes that the following discussion should not be construed to constitute an exhaustive enumeration of the distinctions between the claims of the present application and the references cited by the Examiner. Instead, such distinctions are presented solely by way of example. Consistent with the foregoing, the discussion herein is not intended, and should not be construed, to prejudice or

foreclose future consideration, by the Applicant, of additional or alternative distinctions between the claims of the present application and the references cited by the Examiner.

Applicant notes further that a claim is anticipated under 35 U.S.C. § 102(a), (b), or (e) only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. Further, the identical invention must be shown in as complete detail as is contained in the claim. Finally, the elements must be arranged as required by the claim. *See* Manual of Patent Examining Procedure (“M.P.E.P.”) § 2131.

A. Alleged Anticipation of Claims 1-6

The Examiner has rejected claims 1-6 under 35 U.S.C. § 102(e) as being anticipated by U.S. 6,289,079 issued to *Chornenky et al* (“*Chornenky*”). However, Applicant respectfully disagrees with the contentions of the Examiner and submits that, for at least the reasons outlined below, *Chornenky* fails to anticipate such claims, and the rejection of those claims should accordingly be withdrawn.

In particular, Applicant has amended claim 1 herein to require, among other things, “the stationary anode being positioned to receive at least some of the electrons emitted by the cathode so that x-rays are produced and emitted through a window in the vacuum enclosure” (emphasis added). In contrast, *Chornenky* fails to teach, or even suggest, a window in the vacuum enclosure.

Instead, *Chornenky* discloses a “housing [which] surrounds the anode and cathode components, where the X-ray radiation is produced. X-ray transparent housing material allows full and reproducible dosages. Diamond, because of its low atomic number is highly transparent to x-ray radiation, allowing all clinically significant x-rays to exit the housing” (emphasis added). Col. 4, lines 4-10. Thus, not only does *Chornenky* fail to teach or suggest a “window in

the vacuum enclosure” as required by amended claim 1, but it is likewise clear that because the housing of the *Chornenky* device “surrounds the anode” and is “x-ray transparent,” there would be no motive to modify the *Chornenky* device to include such a window.

In view of the foregoing discussion, Applicant respectfully submits that *Chornenky* fails to disclose each and every element as set forth in claim 1 and, accordingly, *Chornenky* fails to anticipate claim 1, and likewise fails to anticipate claims 2-6 depending therefrom. Applicant thus respectfully submits that for at least the foregoing reasons, the rejection of claims 1-6 has been overcome and should be withdrawn.

B. Alleged Anticipation of Claims 21-26

The Examiner has also rejected claims 21-16 under 35 U.S.C. § 102(e) as being anticipated by *Chornenky*. However, Applicant respectfully disagrees with the contentions of the Examiner and submits that, for at least the reasons outlined below, *Chornenky* fails to anticipate such claims, and the rejection of those claims should accordingly be withdrawn.

In particular, Applicant has amended claim 21, directed to a “stationary anode,” to include, among other things, “a substantially metallic substrate” (emphasis added). In this regard, the Examiner has characterized *Chornenky* as teaching “a substrate (115),” referred to in *Chornenky* as a “conductive anode 115.” Col. 4, line 17. With respect to the relationship of the “conductive anode 115” to other elements of the disclosed device, *Chornenky* notes that “A target metal 130 is formed on a tip portion 116 of the anode 115.” Col. 7, lines 26-27. That is, *Chornenky* distinguishes between the “target metal” and the “anode 115” upon which the target metal is formed. As discussed below, *Chornenky* fails to teach, or even suggest, the combination recited in amended claim 21, directed to a stationary anode that includes a “substantially metallic substrate.”

Rather, *Chornenky* teaches a “diamond anode structure” (see, e.g., Col. 2, lines 3, 5, 12-13, and 23), stating that “The anode 115 comprises conductive diamond.” Col. 5, line 32. Moreover, *Chornenky* repeatedly emphasizes the desirability of diamond as a construction material for the “anode 115” (characterized as “substrate (115)” by the Examiner).

For example, *Chornenky* indicates that “Diamond, because of its mechanical, electrical and chemical properties, is useful in miniature x-ray emitters, meeting the requirements for manufacturing the housing and the anode” (emphasis added). Col. 3, lines 54-56. Along the same lines, *Chornenky* states that “Constructing the vacuum housing and the anode with diamond permits a significant size reduction” (emphasis added). Col. 4, lines 2-3. In a related vein, *Chornenky* indicates that “By using similar materials for both the housing and the anode base of the present invention, and by bonding the housing and the anode base directly to each other, the x-ray emitter of the present invention is capable of maintaining mechanical integrity despite extreme temperature changes” (emphasis added). Col. 3, lines 19-24. With respect to such bonding, *Chornenky* further suggests that “covalent diamond to diamond bonds can provide a mechanically strong, vacuum-tight joint.” Col. 7, lines 14-15.

Thus, not only does *Chornenky* fail to teach a “substantially metallic substrate” in a “stationary anode,” as required by amended claim 21 but, in view of the purported advantages of a “diamond anode structure” asserted in *Chornenky*, it is likewise clear that there is no motive to substitute any material for the disclosed “diamond anode structure,” much less the “substantially metallic substrate” recited in claim 21. The claims of *Chornenky*, each of which requires “an anode structure comprising diamond,” are consistent in this regard. Moreover, it is not at all clear that such a “substantially metallic substrate” would, in any event, be an adequate substitute for the “diamond anode structure” (characterized as “substrate (115)” by the Examiner) in light of, for

example, the advantages purported by *Chornenky* to be achieved in connection with the use of diamond to diamond bonding of the “housing and anode base.”

In view of the foregoing discussion, Applicant respectfully submits that *Chornenky* fails to disclose each and every element as set forth in claim 21 as amended herein and, accordingly, *Chornenky* fails to anticipate claim 21, and likewise fails to anticipate claims 22-26 depending therefrom. Applicant thus respectfully submits that for at least the foregoing reasons, the rejection of claims 21-26 has been overcome and should be withdrawn.

II. Claim Rejections Under 35 U.S.C. § 103(a)

Applicant respectfully notes at the outset that in order to establish a *prima facie* case of obviousness, it is the burden of the Examiner to demonstrate that three criteria are met: first, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings; second, there must be a reasonable expectation of success; and third, the prior art reference (or references when combined) must teach or suggest all the claim limitations. See M.P.E.P. § 2143.

With particular reference now to the obviousness rejection, the Examiner has rejected claims 7-9, 13-14, and 27 under 35 U.S.C. § 103 as being unpatentable over *Chornenky* in view of U.S. 5,768,338 issued to *Kuroda et al.* (“*Kuroda*”). However, Applicant respectfully disagrees with the contentions of the Examiner and submits that, for at least the reasons outlined below, the rejection of claims 7-9, 13-14, and 27 should be withdrawn.

A. Alleged Obviousness of Claim 7

As noted above in connection with the discussion of amended claim 1, from which claim 7 depends, *Chornenky* fails to teach or suggest, at least, the claim 1 limitation of “a substantially metallic substrate.” Moreover, the Examiner has not established that *Kuroda*, whether considered alone or in connection with *Chornenky*, teaches or suggests the combination recited in amended claim 1. For at least this reason, Applicant respectfully submits that the rejection of claim 7 has been overcome and should be withdrawn.

B. Alleged Obviousness of Claims 8, 9, 13 and 14

With respect to independent claim 8, from which claims 9, 13 and 14 depend, the Examiner alleges that “it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide the x-ray target of *Chornenky* with the planar target surface as taught by *Kuroda* since the planar target surface of *Kuroda* would allow one to direct a substantial portion of generated x-rays to predetermined direction.” Applicant respectfully disagrees with the contentions of the Examiner however and submits that, in light of the discussion below, the Examiner has failed to establish a *prima facie* case of obviousness with respect to independent claim 8, as well as with respect to claims 9, 13 and 14 depending therefrom.

In particular, although the Examiner has asserted that modification of the *Chornenky* device to include a planar target surface purported to be taught by *Kuroda* would enable direction of a substantial portion of generated x-rays in a predetermined direction, the Examiner has cited nothing from either of the references that would tend to support a conclusion that such a result would inevitably be achieved. That is, the Examiner has failed to establish that the asserted result would be achieved by the modification of the *Chornenky* device with the teachings of *Kuroda*. Moreover, it is not at all clear from the references that even if such directional control

did result from the allegedly obvious combination, any benefit would thereby be realized. Applicant thus respectfully submits that the Examiner has failed to establish that there is an any suggestion or motivation to make the allegedly obvious combination.

It is likewise clear that if such a modification were made, the functionality of the *Chornenky* device would be impaired. In particular, it was noted above that *Chornenky* discloses a “housing [which] surrounds the anode and cathode components, where the X-ray radiation is produced. X-ray transparent housing material allows full and reproducible dosages” (emphasis added). Col. 4, lines 4-8. In view of the foregoing, and further in view of the configuration and arrangement of the target 130 and housing 125 illustrated in Figure 1, it appears that the *Chornenky* device is intended to emit x-rays in a variety of different directions, and not just in a “predetermined direction.” Because the combination advanced by the Examiner would thus compromise the apparent functionality of the *Chornenky* device, such combination cannot be asserted to be obvious.

The allegedly obvious combination advanced by the Examiner would impair the functionality of the *Chornenky* device in other ways as well. For example, it appears likely that modification of the rounded target 130 taught by *Chornenky* to take the form of a planar target cap such as the Examiner alleges is taught by *Kuroda* would result in a net reduction in target surface area and, consequently, the amount of x-ray radiation generated by the *Chornenky* device. There is no suggestion in either of the references cited by the Examiner that such a result would be desirable or beneficial in any way.

For at least the foregoing reasons, Applicant respectfully submits that the Examiner has failed to establish a *prima facie* case of obviousness with respect to independent claim 8. Because claims 9, 13 and 14, by virtue of their dependence from claim 8, all require a target cap having “a

planar top wall defining a target surface,” and because the rejection of those claims is based upon the same allegedly obvious combination used by the Examiner as a basis for rejection of claim 8, Applicant respectfully submits that the rejection of those claims has likewise been overcome, and should be withdrawn as well.

III. New Claims 28-30

Applicant has added new claims 28-30 depending from claim 1. In light of the discussion herein concerning claim 1, Applicant respectfully submits that new claims 28-30, like claim 1, are in condition for allowance.

CONCLUSION

In view of the discussion and amendments submitted herein, Applicant respectfully submits that each of the pending claims 1-9, 13-14, and 21-30 are in condition for allowance. Therefore, reconsideration of the rejections is requested and allowance of those claims is respectfully solicited. In the event that the Examiner finds any remaining impediment to a prompt allowance of this application that could be clarified in a telephonic interview, the Examiner is respectfully requested to initiate the same with the undersigned attorney.

Dated this 17th day of ^{May}~~April~~ 2004.

Respectfully submitted,



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